IN THE CLAIMS:

1. (Previously Amended) A method executed in a computer of computing a distance measure between first and second mixture type probability distribution functions, $G(x) = \sum_{i=1}^{N} \mu_i g_i(x)$, and $H(x) = \sum_{k=1}^{K} \gamma_k h_k(x)$, pertaining to audio data, the improvement characterized by:

said distance measure being

$$D_M(G,H) = \min_{w=[\omega_{ik}]} \sum_{i=1}^{N} \sum_{k=1}^{K} \omega_{ik} d(g_i, h_k),$$

where $d(g_i, h_k)$ is a function of the distance between a component, $g_i$, of the first probability distribution function and a component, $h_k$, of the second probability distribution function where

$$\sum_{i=1}^{N} \mu_i = 1 \ and \ \sum_{k=1}^{K} \gamma_k = 1,$$

and

$$\omega_{ik} \geq 0, \ 1 \leq i \leq N, 1 \leq k \leq K,$$

and

$$\sum_{k=1}^{K} \omega_{ik} = \mu_i, 1 \leq i \leq N, \sum_{i=1}^{N} \omega_{ik} = \gamma_k, 1 \leq k \leq K.$$

2. (Original) The method according to claim 1 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

3. (Previously Amended) The method according to claim 1 wherein the element distance between the first and second probability distance functions is a Kullback Leibler Distance.

4. (Original) The method of claim 1 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

5. (Previously Amended) A computer program embedded in a storage medium for computing a distance measure between first and second mixture type probability distribution functions, $G(x)=\sum_{i=1}^{N}\mu_i g_i(x)$, and $H(x)=\sum_{k=1}^{K}\gamma_k h_k(x)$, pertaining to audio data, the improvement comprising a software module that evaluates said distance measure in accordance with equation:

$$D_M(G,H)=\min_{w=[\omega_{ik}]}\sum_{i=1}^{N}\sum_{k=1}^{K}\omega_{ik}d(g_i,h_k),$$

where $d(g_i, h_k)$ is a function of distance between a component, $g_i$, of the first probability distribution function and a component, $h_k$, of the second probability distribution function where

$$\sum_{i=1}^{N}\mu_i=1 \ and \ \sum_{k=1}^{K}\gamma_k=1,$$

and

$$\omega_{ik}\geq 0,\ 1\leq i\leq N, 1\leq k\leq K,$$

and

$$\sum_{k=1}^{K}\omega_{ik}=\mu_i, 1\leq i\leq N, \sum_{i=1}^{N}\omega_{ik}=\gamma_k, 1\leq k\leq K.$$

6. (Original) The computer program according to claim 5 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

7. (Original) The computer program according to claim 5 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

8. (Original) The computer program of claim 5 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

9. (Previously Amended) A computer system for computing a distance measure between first and second mixture type probability distribution functions,

$G(x)=\sum_{i=1}^{N}\mu_i g_i(x)$, and $H(x)=\sum_{k=1}^{K}\gamma_k h_k(x)$, pertaining to audio data comprising:

memory for storing said audio data;

a processing module for deriving one of said mixture type probability distribution functions from said audio data; and

a processing module for evaluating said distance measure in accordance with

$$D_M(G,H)=\min_{w=[\omega_{ik}]}\sum_{i=1}^{N}\sum_{k=1}^{K}\omega_{ik}d(g_i,h_k),$$

where $d(g_i, h_k)$ is a function of the distance between a component, $g_i$, of the first probability distribution function and a component, $h_k$, of the second probability distribution function,

where

$$\sum_{i=1}^{N}\mu_i=1 \ \ and \ \sum_{k=1}^{K}\gamma_k=1,$$

and

$$\omega_{ik}\geq 0,\ \ 1\leq i\leq N, 1\leq k\leq K,$$

and

$$\sum_{k=1}^{K}\omega_{ik}=\mu_i, 1\leq i\leq N, \sum_{i=1}^{N}\omega_{ik}=\gamma_k, 1\leq k\leq K.$$

10. (Original) The computer system according to claim 9 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

11. (Original) The computer system according to claim 9 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

12. (Original) The computer system of claim 9 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

13. (Currently Amended) A method <u>executed in a computer</u> for computing a distance measure between a mixture type probability distribution function $G(x)=\sum_{i=1}^{N}\mu_i g_i(x)$, where $\mu_i$ is a weight imposed on component, $g_i(x)$, and a mixture type probability distribution function $H(x)=\sum_{k=1}^{K}\gamma_k h_k(x)$, where $\gamma_k$ is a weight imposed on component $h_k$ comprising the steps of:

computing an element distance, $d(g_i, h_k)$, between each $g_I$ and each $h_k$ where $1 \le i \le N, 1 \le k \le K$,

computing an overall distance, denoted by $D_M(G,H)$, between the mixture probability distribution function G, and the mixture probability distribution function H, based on a weighted sum of the all element distances,

$$\sum_{i=1}^{N}\sum_{k=1}^{K}\omega_{ik} d(g_i, h_k),$$

wherein weights $\omega_{i,k}$ imposed on the element distances $d(g_i, h_k)$, are chosen so that the overall distance $D_M(G,H)$ is minimized, subject to

$$\omega_{ik} \ge 0,\ 1 \le i \le N,\ 1 \le k \le K$$

$$\sum_{i=1}^{N}\omega_{ik} = \gamma_k,\ 1 \le k \le K, \text{ and}$$

$$\sum_{k=1}^{K}\omega_{ik} = \mu_i,\ 1 \le i \le N.$$

14. (Original) The method according to claim 13 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

15. (Original) The method according to claim 13 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

16. (Original) The method of claim 13 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.